

ATTACHMENT 1
(Light Dissipation)

Ser. No. 10/057,918
Examiner U. Anyaso
Group Art Unit 2675

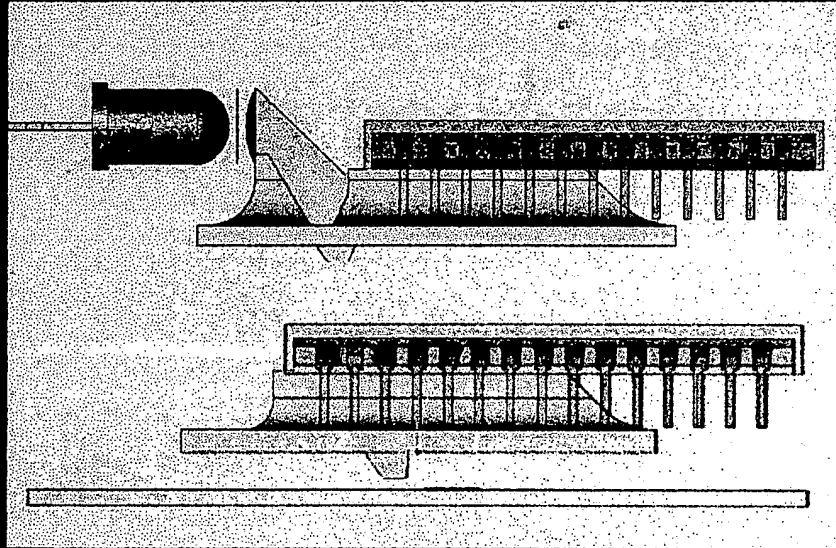
Attachment 1.

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Package -- Live Demo

The package is a live demo of a package that is used to dissipate heat from a package. The package is a live demo of a package that is used to dissipate heat from a package.

Gen. 1



Gen. 2

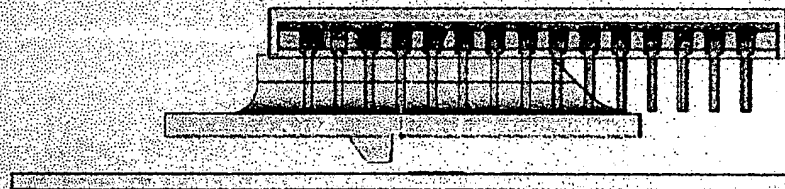


Figure 1. Example 1.

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Illumination System

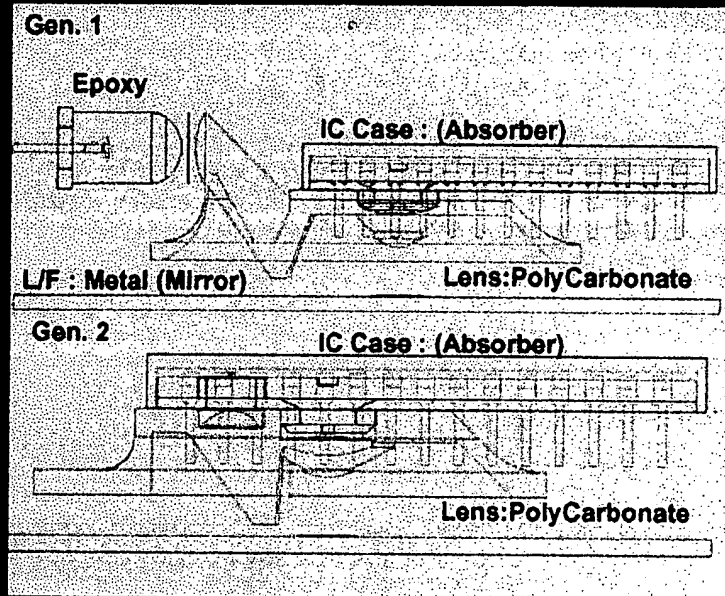
TracePro Parameters Setting

LED chip power

=1 W

Ray number

=1,000,000 ray



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Illumination System

Stray Light - TracePro

Gen. 1

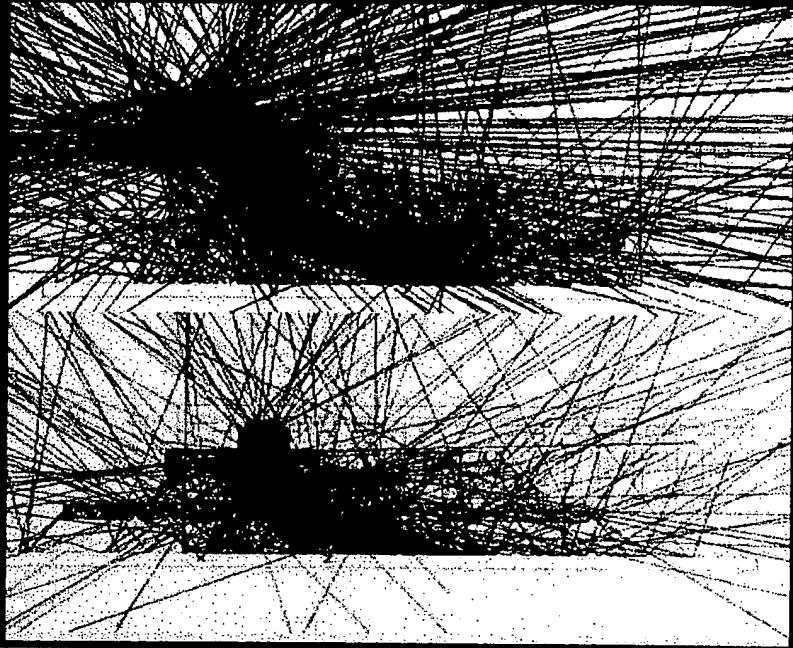
Gen. 1

First Lens	40.10%
Illuminated Spot	17.05%

Gen. 2

Gen. 2

First Lens	96.90%
Illuminated Spot	40.22%



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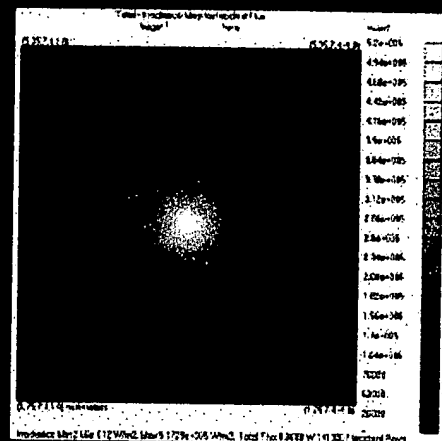
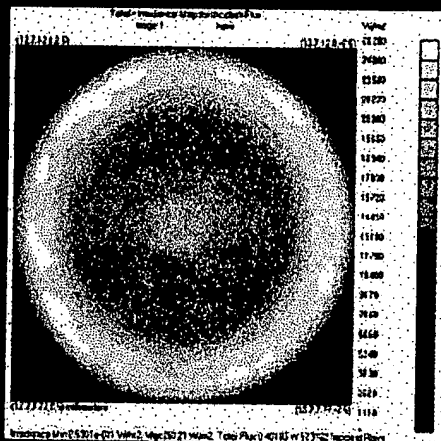
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Illumination System

First Lens - TracePro

Gen. 1 40.10% of Total Power

Gen. 2 96.9% of Total Power



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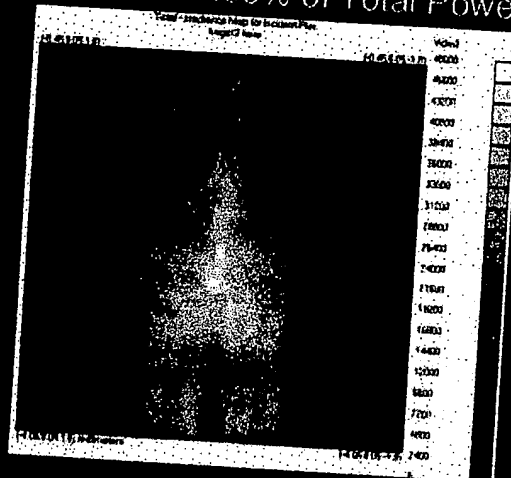
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Illumination System

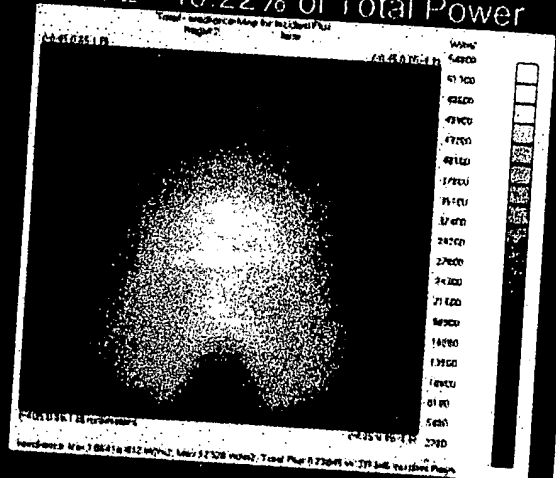
Illuminated Spot - TracePro

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Gen. 1 17.05% of Total Power



Gen. 2 40.22% of Total Power



ATTACHMENT 2 (Power Dissipation)

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Attachment 2.

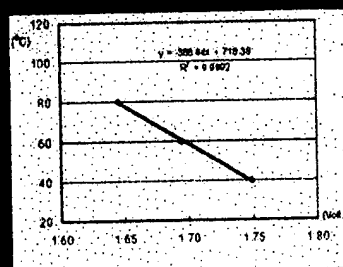
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Power Dissipation (Rin)

graph of the power dissipation and resistance
of the diode for the different temperatures
of the diode.

A. Generation 2

Temp (°C)	$V_f @ I_f = 100\mu A$
30	
40	1.749
60	1.695
80	1.646
100	



$$T = T_{amb} + P_{di} \times R_{\theta}$$

$$P_{di} = I_f \times V_f$$

ATTACHMENT 2 (Power Dissipation)

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Power Dissipation (Rin)

Power Dissipation (Rin) is the power dissipated by the device during operation. It is calculated as follows:

A. Generation 2

Heating I_f (mA)	V_f (V)	T_a (°C)	I_f	P_d	R_{th}
100	2.1	25	100	2.1	180
200	2.1	25	200	4.2	180

B. 5mm LED (Traditional)

Heating I_f (mA)	V_f (V)	T_a (°C)	I_f	P_d	R_{th}
100	2.1	25	100	2.1	80
200	2.1	25	200	4.2	80

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LED Power Dissipation (R_{th})

	Gen.1 (5mm LED)	Gen.2
Thermal Resistance	591	186

Lower R_{th} Lower Power Dissipation Higher LED Reliability

ATTACHMENT 2 (Power Dissipation)

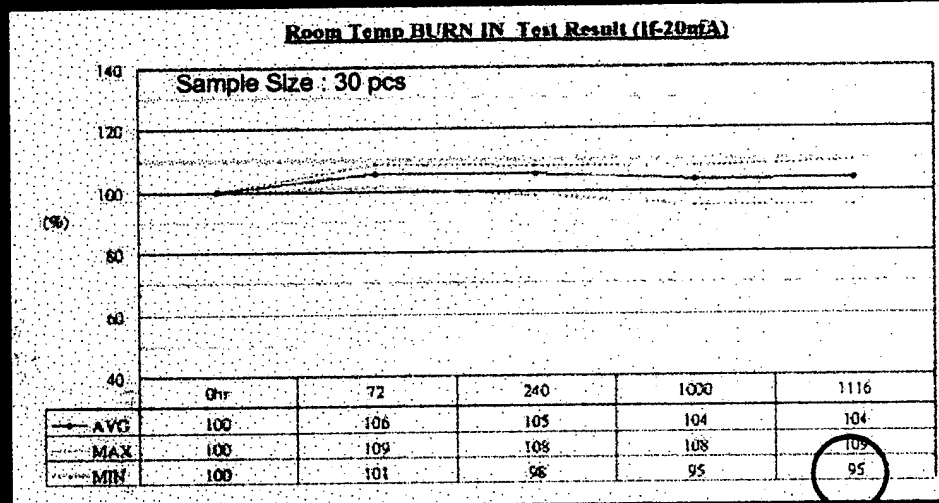
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LED Burn-In (Life test)

Generation. 2 LED Burn-In(TS)



5 mm LED(TS) Degradation : 10~15 % (at 1K hrs)

ATTACHMENT 3
(Summary)

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Attachment 3.

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Summary -- Why G2 ?

Benefits of integrated solution

Features	Gen.1	Gen.2
Parts	more	few
LED Bending	Needed	No Needed
LED Assembly	Needed	No Needed
Clip Assembly	Needed	No Needed
LED Alignment	Required	None
LED Reliability	High	Higher